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## ABSTRACT

A winning collegiate field hockey coach was observed across seventeen practice sessions through one complete competitive season. A category system for the event recording of verbal and nonverbal behaviors delivered to the team and to the sixteen individual players produced descriptive-analytic information about relative behavior frequencies for offence and defense, starters and nonstarters, and field players and goalies. The players and the coach rank-ordered each team member for perceived amounts of coach attention during the season, and the coach was interviewed at the season's end. Player and coach perceptions were more closely correlated with each other than either perception correlated with observed data. Most frequently used behavior categories included praise, instruction, criticism, and alert (management). If similar behavior patterns are found for other coaches, this is an initial step toward a predictive model for winning coaches based on actual behaviors emitted in a live field setting. (Author/CJ)

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A DESCRIPTIVE-ANALYTIC STUDY OF THE PRACTICE  
FIELD BEHAVIOR OF A WINNING FEMALE COACH

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#### ABSTRACT

A winning collegiate field hockey coach was observed across seventeen practice sessions through one complete competitive season. A category system for event recording verbal and nonverbal behaviors delivered to the team and the sixteen individual players produced descriptive-analytic information about relative behavior frequencies for offense and defense, starters and non-starters, and field players and goalies. Players and coach rank ordered each team member for perceived amounts of coach attention during the season, and the coach was interviewed at the season's end. Player and coach perceptions were more closely correlated with each other than either perception correlated with observed data. Most frequently used behavior categories included PRAISE, INSTRUCTION, CRITICISM/CUE, and ALERT (management). If similar behavior patterns are found for other coaches, this is an initial step toward a predictive model for winning coaches based on actual behaviors emitted in a live field setting.

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INTRODUCTION

Winning coaches are often perceived to have almost a mystical set of unique competencies, not the least of which is the ability to communicate verbally and nonverbally to push athletes to impossible feats of accomplishment. Although such an image is a highly publicized and widespread belief, there are few data available with which to consider the impact of a coach's behavior upon athletes and their performance.

Recently, more systematic and objective efforts have been made to report coaching behaviors (Darst, 1978; Rushall & Smith, 1979; Smith, Smoll & Curtis, 1978; Smith, Smoll & Hunt, 1977). One obvious question generated by early investigation is whether there are common elements in the behavior patterns exhibited by coaches who consistently produce winning teams.

It was the purpose of this study to investigate the behavior of a winning coach during practice sessions. The selection of a "winning" coach was based on one or more of the following criteria: (a) having won 75% of games played during the previous season, (b) having been invited to a post-season championship tournament at the end of the previous season, or (c) having been nationally ranked in the top ten during the previous season.

If a winning coach could be identified by exhibiting certain behavior patterns, then such results would have potential significance for all individuals interested in producing skilled players. It is curious that research efforts to determine the behavior of winning coaches have previously neglected the richest possible environment for locating clues about such coaches - the playing field.

Using direct field observation procedures to collect data on verbal and non-verbal behavior is quite common in the literature of naturalistic observation that is conducted in both classrooms and gymnasias (Amidon & Hough, 1967; Anderson, 1980), and the techniques have been honed to a highly refined level. But only recently have field observation instruments received attention as a possible means of producing data for model-building in sport psychology (Martens, 1979). It has been suggested that an inductive field study approach may be a useful and refreshing

perspective for generating theories which differ from those provided by the psychometric tradition (Siedentop, 1980). Such model-building, if grounded in strong descriptive-analytic data, ultimately would allow prediction of effective coaching behaviors, i.e., how coaches should interact with their players to provide optimal conditions for improved skill performance and winning. One initial small step toward this goal, then, is to describe exactly what winning coaches do.

There is now very little information about coaching behaviors in general and about the coaching behaviors of women in particular (Mancini & Agnew, 1978). The current study was undertaken to collect descriptive-analytic information about a female coach's verbal and nonverbal behavior patterns during practice sessions throughout an entire sport season. This investigation was the first in a programmatic effort to describe and analyze coaching behaviors, the ultimate target of which is to build differential models for predicting the behavior of winning and nonwinning coaches.

The investigation included descriptions of selected coaching behaviors and of the relationships between the coach's and the players' perceptions of those behaviors. Descriptive questions included the following:

- (1) What was the general pattern of behaviors emitted by this winning coach?
- (2) How many items in each of the observation instrument's categories did this winning coach emit?
- (3) Which individual players received most of the coach's attention?
- (4) How much of this coach's behavior was directed toward individual players rather than the team or a subgroup?
- (5) How much of this coach's behavior was directed toward offensive and defensive players as distinct groups?
- (6) How much of this coach's behavior was directed toward starters and non-starters on the team?
- (7) How much of this coach's behavior was directed toward field players and goalies' respectively?

The following questions concerning relationships were proposed:

- (1) How did this coach's estimate of which players received most of her attention compare with observation-based rankings of actual frequencies?
- (2) How did team members' estimates of which players had received most of the coach's attention compare with observation-based rankings of actual frequencies?

- (3) How did the coach's estimate compare with the team members' estimates of which players had received most of her attention?

#### METHOD

Subject and Setting. The subject in this study was a female coach in her second year of coaching varsity women's field hockey and lacrosse at the AIAW Division I intercollegiate level. In each of the past two years, this coach has guided both field hockey and lacrosse teams to national rankings, high seedings in the AIAW National Championships, and fourth place finishes. She herself played field hockey for fifteen years, being selected to the U.S. Team and Squad for ten years. She had coached field hockey for eight seasons.

Data collection for this study took place during an entire field hockey season. The team consisted of sixteen varsity players, eleven of whom were regular starters. Of these starters, two were named to the All-American squad and one of these two was selected for the 1980 Olympic Team. The coach's verbal and nonverbal behavior was recorded on the practice field or in a large gymnasium and was collected over 17 practice sessions distributed throughout the course of the varsity season.

Observation and recording procedures. The observation instrument utilized for collected data was adapted from an instrument devised by Tharp and Gallimore (1976) for observing UCLA basketball coach John Wooden. Eleven mutually exclusive categories comprise the observation system (see Table 1 for a list of categories, coding symbols, and definitions).

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#### INSERT TABLE 1 ABOUT HERE

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Observation and recording of coaching behavior was performed by one or more trained observers during each practice session. The observer(s) collected data for periods ranging from 30 to 60 minutes per practice session. All difficulty in hearing verbal behaviors was resolved by having the coach wear a battery-powered cordless microphone which transmitted to a radio receiver. This arrangement allowed observers to hear without impinging on the practice environment. To aid observers in recording data, they translated coaching behaviors into behavior categories by speaking into a battery-powered tape recorder using a remote control hand-held microphone. Whenever the coach made a statement to an individual or to the group, the observer(s) transcribed that information by speaking into the remote control microphone giving both the player's name and behavior category (e.g., "Mary, Hustle"; "Team, V+"). No direct recording

Table 1. Categories and Definitions for the Coaching Behavior Observation Instrument

|                                 |                                                                                                                                                                                                                                                        |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| INSTRUCTION (I):                | initial information given players about <u>how</u> to execute a skill, play, strategy, etc.; given before drills, to individuals when not actually moving during drills, always <u>preceding</u> the desired action to be executed                     |
| HUSTLE (H):                     | statements without <u>specific</u> information for players about what or how to do a task, with the intention of generally intensifying effort (e.g.'s, "go, go", "move!", "hustle")                                                                   |
| CORRECT MODELING ( $M^+$ ):     | showing players (with or without a stick) how to <u>correctly</u> execute a skill                                                                                                                                                                      |
| INCORRECT MODELING ( $M^-$ ):   | showing players with or without the stick what they've done wrong                                                                                                                                                                                      |
| PRAISE ( $V^+$ ):               | coach's statements approving a player action                                                                                                                                                                                                           |
| CRITICISM/CUE (V-/CUE):         | a dual category, including coach's statements disapproving a player action as well as short, quick, information-carrying reminders of what to do RIGHT NOW as players were moving during drills (e.g.'s, "feet", "bend", "stick position", "position") |
| NONVERBAL PRAISE ( $NV^+$ ):    | coach's movements, gestures, or facial expressions conveying approval for player actions, (e.g., clapping, thumbs up sign, grin, etc.)                                                                                                                 |
| NONVERBAL CRITICISM ( $NV^-$ ): | coach's movements, gestures, or facial expressions conveying <u>disapproval</u> for player actions (e.g., a scowl or frown, a grimace at a missed pass, etc.)                                                                                          |
| ALERT (ALERT):                  | comments related to organization of players and equipment, where to go, who to go, moving goal cages, etc., including "Ready?...Go!" and signals to stop actions on the field ("OK, everybody in here")                                                |
| QUESTION (?):                   | any question to player(s) (e.g., "ready?" preceding start signal)                                                                                                                                                                                      |
| OTHER (OTHER):                  | any comment which does not fit into the previous categories (e.g., talking to team manager or coders, making jokes, discussing nonsport related topics, etc.)                                                                                          |

was made of the coach's actual verbal behavior. Use of audiotape for recording data was necessary to insure accuracy at the high rates of verbal interaction employed by the subject coach. A pilot study had indicated that the coach's comments came too fast to code with a more conventional paper and pencil recording format, since many of the coach's behaviors were missed when observers had to look down at their coding sheets to mark a category. After the practice session, the observer(s) transcribed the audiocassette information onto master coding sheets that were designed specifically for this observation instrument (copies are available from the authors).

Event recording was chosen as the data collection procedure in order to gain the clearest possible picture of the coach's total verbal and nonverbal behavior patterns (Cooper, 1974). Any behavior in the INSTRUCTION category taking longer than 3 seconds was timed. Instructional time segments were divided by three to produce a discrete number of events (e.g., a player receiving 27 seconds of INSTRUCTION would later receive 9 tallies in the INSTRUCTION category on the master coding sheet).

Participants' behavior estimates. At the end of the playing season, the coach and each player on the team was asked to estimate and rank each player in regard to total amounts of coaching behavior received over the course of the entire field hockey season. Comparisons were made of the coach's estimate, the players' estimates, and the observed amounts of coaching behavior each player actually received. The Spearman Rank-Order Correlation Technique was used to determine relationships between the coach's estimate and the observed amount, the players' estimate and the observed amount, and the coach's and players' estimates. Once the estimates were obtained from the coach, she was presented with both the ranking data and the data from the field observations. She was then interviewed to determine her own perceptions about the intentions and reasons underlying her observed behaviors during the playing season.

Interobserver agreement (IOA). In order to insure interobserver reliability, periodic checks by the percentage of agreement method (Cooper, 1974) were conducted eight times during the seventeen practice sessions. IOA's were calculated for (a) the total instrument (total number of behaviors observed regardless of category), (b) number of behaviors per player, and (c) number of behaviors per observation category. The formula for calculating the IOA was:

$$\frac{\text{AGREEMENTS}}{\text{AGREEMENTS} + \text{DISAGREEMENTS}} \times 100 = \text{IOA PERCENTAGE}$$

It was determined prior to beginning the study that observers would train by a 10-minute videotape and live observation in the practice field setting to criterion IOA's of at least 80% before actual data collection began. All observers reached criterion IOA in approximately seven one-hour training sessions.

#### RESULTS

Interobserver agreement for the total instrument (all categories combined) had a mean of 86% with a range of 82% to 88%. The IOA for coaching behavior directed to individual players had a mean of 88%, and a range of 84% to 89%. The IOA for separate coaching behavior emitted by the coach had a mean of 92%, with a range of 84% to 94%.

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INSERT TABLE 2 ABOUT HERE

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As seen in Table 2, the coach emitted 3,710 behaviors (separately recorded events) toward the players during the 17 observed practice sessions, 2,741 to individuals (66.6%) and 1,239 to the team (33.4%). Offensive players received 1,258 coaching behaviors (50.9%), while defensive players were given 1,213 (49.1%) of the total coaching behaviors. The eleven starting players received 1,938 behaviors (78.4%), and 533 behaviors (21.6%) were directed toward the five non-starters. The fourteen players in field positions received 2,320 behaviors (94%). The two goalies were given 6% of the coach's attention (151 behaviors). It should be noted, however, that the goalies had special practice sessions with the coach for approximately 30-45 minutes prior to each regular team session 2-3 times per week. Therefore, much of the coach's behavior directed toward goalies was unrecorded because it occurred outside the team practice situation. Of the total 2,471 coaching behaviors directed toward individuals, the number and percentage received by each player is indicated by rank order in Table 2.

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INSERT TABLE 3 ABOUT HERE

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Table 3 shows the coach's overall behavior patterns by rank order for the separate categories of the observation system. Praise and Instruction were used equally by this coach, each being approximately 31% of the total behavior pattern. The next most frequently utilized category was the combination V-/CUE (20.8%). The

Table 2. Rank ordered amounts of coaching behavior directed to individual players throughout the season.

| <u>PLAYERS</u>   | <u>TOTAL NUMBER OF OBSERVED BEHAVIORS</u> | <u>PERCENTAGE OF BEHAVIORS</u> |
|------------------|-------------------------------------------|--------------------------------|
| A (O, S)         | 298                                       | 12.1                           |
| B (D, S)         | 224                                       | 9.1                            |
| C (D, S)         | 223                                       | 9.0                            |
| D (D, S)         | 219                                       | 8.9                            |
| E (O, S)         | 215                                       | 8.7                            |
| F (D, S)         | 172                                       | 7.0                            |
| G (O, S, AA, OL) | 166                                       | 6.7                            |
| H (O, S, C)      | 137                                       | 5.5                            |
| I (O, NS)        | 136                                       | 5.5                            |
| J (D, S)         | 136                                       | 5.5                            |
| K (O, NS)        | 119                                       | 4.8                            |
| L (O, NS)        | 111                                       | 4.5                            |
| M (D, NS)        | 87                                        | 3.5                            |
| N (G, NS)        | 80                                        | 3.2                            |
| O (O, S, C, AA)  | 77                                        | 3.1                            |
| P (G, S)         | 72                                        | 2.9                            |
|                  | <u>2471</u>                               | <u>100%</u>                    |

Legend:

O= offense  
S= starter  
G= goalie  
AA= All American

D= defense  
NS= non-starter  
C= co-captain  
OL= Olympian

|                     |                     |
|---------------------|---------------------|
| INDIVIDUALS         | 2471 (66.6%)        |
| GROUP               | <u>1239 (33.4%)</u> |
|                     | 3710                |
| *OFFENSE            | 1258 (50.9%)        |
| *DEFENSE            | <u>1213 (49.1%)</u> |
|                     | 2471                |
| *STARTERS (11)      | 1938 (78.4%)        |
| *NONSTARTERS (5)    | <u>533 (21.6%)</u>  |
|                     | 2471                |
| *FIELD PLAYERS (14) | 2320 (93.9%)        |
| *GOALIES (2)        | <u>151 (6.1%)</u>   |
|                     | 2471                |

\*Based on total behaviors given to individuals and not the group.

Table 3. Rank ordered amounts of coaching behaviors by observation instrument categories.

| <u>BEHAVIOR CATEGORIES</u> | <u>TOTAL NUMBER OF OBSERVED BEHAVIORS</u> | <u>PERCENTAGE OF OBSERVED BEHAVIORS</u> |
|----------------------------|-------------------------------------------|-----------------------------------------|
| PRAISE (V+)                | 1169                                      | 31.50%                                  |
| INSTRUCTION (I)            | 1151                                      | 31.02%                                  |
| CRITICISM/CUE (V-/CUE)     | 745                                       | 20.08%                                  |
| MANAGEMENT (ALERT)         | 350                                       | 9.43%                                   |
| HUSTLE (H)                 | 104                                       | 2.84%                                   |
| QUESTION (?)               | 91                                        | 2.45%                                   |
| CORRECT MODELING (M+)      | 70                                        | 1.89%                                   |
| NONVERBAL PRAISE (NV+)     | 11                                        | .30%                                    |
| INCORRECT MODELING (M-)    | 10                                        | .26%                                    |
| NONVERBAL CRITICISM (NV-)  | 8                                         | .21%                                    |
| OTHER (OTHER)              | 1                                         | .02%                                    |
|                            | <u>3710*</u>                              | <u>100.00%</u>                          |

\*Total includes behaviors directed to both individuals and groups.

remaining coaching behaviors (17.4%) were scattered among the other categories.

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INSERT TABLE 4 ABOUT HERE

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Table 4 shows the relationship between the rankings of observed data and the coach's and players' estimates of those rankings. The respective Spearman Rank Order Correlations for the three comparisons were:  $r = .50$  ( $p < .05$ ) for observed rankings with the coach's estimates;  $r = .72$  ( $p < .01$ ) for observed rankings with players' estimates; and  $r = .84$  ( $p < .001$ ) for coach's estimates and players' estimates.

#### DISCUSSION

Several conclusions were supported by the data and corroborated by the coach when she was given feedback about the results of this study. The data support a very direct style of coaching. The predominant use of the categories of INSTRUCTION, PRAISE, CRITICISM/CUE, and the managerial category ALERT demonstrated that this coach strongly emphasized not only what to do but how well it was done. These four observation categories comprised 92% of the total number of behaviors exhibited while the remaining 8% of the behaviors were spread over the other seven observation categories. An additional component of her coaching style indicated high energy and enthusiasm for what she was doing: she interacted very frequently with her players (approximately four behaviors per minute) and emitted a high total number of behaviors when compared with other coaches' rates of behavior (Tharp & Gallimore, 1976; Darst et al., 1978).

The low frequency of QUESTIONS directed to individual players was another indication of this coach's very direct style of interaction. The coach corroborated this conclusion during the post season interview session. She attributed her low frequency of QUESTIONS to the pressure of the sport environment, stating that telling players what to do gets quicker results than asking them what to do.

The coach accounted for the low frequencies of CORRECT and INCORRECT MODELING (demonstration) by saying that since these players had such high levels of expertise, it was a waste of time to be "showing" them how to perform. Whenever either type of MODELING did occur, it seemed to focus upon basic rather than more advanced hockey skills (e.g., a basic dribble instead of an Indian dribble). This finding was no surprise to the coach who indicated she believed that even highly skilled players sometimes need reminding about the basics of their sport at periodic intervals. This result approximated a similar one from the study involving basketball coach John Wooden (Tharp & Gallimore, 1976).

Table 4. Observed ranking, coach's ranking, and players' ranking of amount of coaching behavior directed toward individual players.

| <u>PLAYER</u>    | <u>OBSERVED RANKING</u> | <u>COACH'S RANKING</u> | <u>PLAYERS' RANKING</u> |
|------------------|-------------------------|------------------------|-------------------------|
| A (O, S)         | 1                       | 1                      | 1                       |
| B (D, S)         | 2                       | 4                      | 3.5 (tie)               |
| C (D, S)         | 3                       | 3                      | 2                       |
| D (D, S)         | 4                       | 12                     | 8                       |
| E (O, S)         | 5                       | 9                      | 5                       |
| F (D, S)         | 6                       | 15                     | 10                      |
| G (O, S, AA, OL) | 7                       | 2                      | 3.5 (tie)               |
| H (I, S, C)      | 8                       | 6                      | 11                      |
| I (O, NS)        | 9                       | 7                      | 9                       |
| J (D, S)         | 10                      | 5                      | 7                       |
| K (O, S)         | 11                      | 16                     | 16                      |
| L (O, NS)        | 12                      | 13                     | 13                      |
| M (D, NS)        | 13                      | 14                     | 15                      |
| N (G, NS)        | 14                      | 11                     | 14                      |
| O (O, S, C, AA)  | 15                      | 8                      | 6                       |
| P (G, S)         | 16                      | 10                     | 2                       |

Legend:

O = offense  
S = Starter  
G = Goalie  
AA = All- American

D = Defense  
NS = Non-starter  
C = Co-captain  
OL = Olympian

Spearman Rho Rank Order Correlations

Observed - Coach Ranking  $r = .50$  ( $p < .05$ )  
Observed - Player Ranking  $r = .72$  ( $p < .01$ )  
Coach - Player Ranking  $r = .84$  ( $p < .001$ )

This subject directed more of her attention to individuals (66.6%) than to the team as a whole (33.4%). In the interview, she stated that she had several reasons for this. First, she believed that such an approach "individualized" her practice sessions and helped reduce the notion that individual efforts were being lost within the efforts of the group. A second reason given for using individuals' names was to have players "key" on her before she gave instructions or feedback. Such intentions to maximize individualized interactions were further supported by the fact that she emitted more CUES to the entire team while CRITICISM and PRAISE were directed more to individual players. The coach commented that even though each player is expected to perform the drills in a similar manner, different players make different mistakes and it is important to provide differential feedback to highlight differences in performance. She consciously used this technique as an effective two-part coaching strategy, i.e., gaining individual player attention (step 1) before attempting to give instruction or feedback (step 2).

The low observed frequencies of NONVERBAL behavior (NONVERBAL PRAISE = .30% and NONVERBAL CRITICISM = .21%) supported the coach's contention that nonverbal behavior was lost on players who are concentrating on their own skill performance and that the verbal categories were more effective for improving player and team skills. The low frequency of HUSTLES was not surprising to the coach. She expected practices to be conducted at "game intensity" and since players were aware of this expectation and generally did respond with maximal efforts, the coach indicated that encouraging further efforts by using HUSTLES would have had little impact. The equal distribution of interactions to offensive and defensive players reflected the coach's stated strategy that winning games entailed a balanced emphasis not only on scoring goals but also preventing your opponents from doing the same.

The correlations obtained between the observed rank order of players for frequency of individual coach attention and both coach and player predictions of these rankings indicated a sharp difference between the coach's and players' perceptions of what actually occurred. The coach and the players ranked coach-player interactions in a similar manner and were closer in agreement than either the coach or the players' predictions were to the observed data. The coach stated several probable reasons for discrepancy. First, some players had been ranked high because of their leadership position (e.g., a Co-Captain) or because of attention from the media (e.g., the Olympic team member). A second reason given was that certain players probably received more of the coach's attention because

they had trouble "adjusting" to the team style of play. Third, the coach speculated that certain coach-player interactions might be remembered more for their uniqueness or emotional quality than just the quantity of such interactions.

The present study provided information about the frequency and kind of coaching behavior exhibited during practice sessions by a single winning coach. As such, it is a necessary step toward building a model for winning coaches to follow. Before the impact of coaching behavior can be fully evaluated, it will be necessary to devise strategies for assessing the sequencing of specific coaching behaviors and to investigate the exact nature of relationships between these sequences and player behaviors and performance skills during practices. Additional attention should be paid to the influence of seasonal factors upon both coach and player behavior (i.e., how do coaching and player patterns change in practices before a crucial game or after an unexpected loss?)

It is hoped that subsequent investigations will utilize similar behavior observation categories and data collection procedures in order to obtain findings that can be compared and used to build a model of effective coaching behavior. Such studies will tap the wealth of information about coach and athlete behavior that exists in the live laboratories of practice fields and gymnasias. This study was a preliminary effort in that direction.

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